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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,866	10/30/2003	Shinji Wakabayashi	2018-800	7706
23117	7590	02/10/2005	EXAMINER	
NIXON & VANDERHYE, PC 1100 N GLEBE ROAD 8TH FLOOR ARLINGTON, VA 22201-4714			NATALINI, JEFF WILLIAM	
			ART UNIT	PAPER NUMBER
			2858	

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/695,866	<b>Applicant(s)</b> WAKABAYASHI, SHINJI	
	<b>Examiner</b> Jeff Natalini	<b>Art Unit</b> 2858	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/30/03</u> . | 6) <input type="checkbox"/> Other: ____.  |

*Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koluvek (4829253).

In regard to claim 1, Koluvek discloses an fluid detection apparatus (col 1 line 7-10) comprising: a sensor (fig 1 (10)) that detects a characteristic of the fluid and produces a characteristic signal (fig 1 (10) col 2 line 28-38); a malfunction detecting circuit (fig 1 (70)) that has a switch (94) connected in parallel with the sensor (70 and 10 are in parallel); an evaluation circuit (82) that evaluates whether the fluid is deteriorated based on the characteristic signal (col 4 line 23-34), which is detected when the switch is opened so that the malfunction detecting circuit is not electrically conducted in parallel with the sensor (it is stated in col 4 line 34-39 that the switch is turned on to measure the conditions of electrodes, since it states the probes develop a voltage between the electrode and conductor corresponding to the pH (col 2 line 35-38) as the voltage is evaluated through terminals B and C in 82, the switch would be off in normal operation); and a determination circuit (82) that determines whether the sensor malfunctions based on the characteristic signal (col 4 line 65 – col 5 line 10), which is detected when the switch is closed so that the malfunction detecting circuit is electrically conducted in parallel with the sensor (col 4 line 34-39).

Koluvek lacks specifically disclosing that the fluid is oil. It would have been obvious to one with ordinary skill in the art at the time the invention was made that the fluid could be oil so as to determine the pH factor of oil (col 2 line 28-33).

Also, oil deterioration recites an intended use of the apparatus in claim 1. It is noted that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235, 238 (CCPA 1967). In this instance, the device disclosed by Koluvek is capable of performing the intended use. Thus, the prior art device of Koluvek meets the limitations of the claim(s).

In regard to claim 2, Koluvek discloses wherein the malfunction detecting circuit (70) has a resistor (92), the evaluation circuit evaluates whether the fluid is deteriorated based on the characteristic signal when the switch is opened so that the resistor of the malfunction detecting circuit is not electrically conducted in parallel with the sensor (col 4 line 23-34, same as claim 1), and the determination circuit determines whether the sensor malfunctions based on a divided voltage in which a voltage of the characteristic signal is divided by the resistor when the switch is closed (col 4 line 34-38) so that the resistor of the malfunction detecting circuit is electrically conducted in parallel with the sensor (col 4 line 65 – col 5 line 10).

In regard to claim 3, Koluvek discloses a measuring circuit having an amplifier (30) that is connected between the sensor (sensor as described in claim 1 (10) consists of sensing part containing the electrodes and liquid and the measurement part (30)) and the evaluation/determination circuit (82).

In regard to claim 4, Koluvek discloses wherein the malfunction detecting circuit is electrically conducted in parallel with the sensor for a certain period within an operation period of the fluid deterioration detection apparatus so that the determination circuit determines whether the sensor malfunctions (col 4 line 34-38, when switch is on (70) is in parallel with (10)).

In regard to claim 5, Koluvek discloses wherein the characteristic has acidity and basicity of the fluid (col 2 line 29), and the sensor outputs the characteristic signal in response to the acidity and the basicity of the fluid (col 2 line 36-39).

In regard to claim 6, Koluvek discloses the sensor includes a reference electrode that has a constant potential regardless of acidity and basicity in the fluid (col 2 line 39-42), and a sensitive electrode in which an electric potential changes in response to the acidity and basicity in the fluid (col 2 line 43-45), and the sensor outputs a potential difference between the reference electrode and the sensitive electrode as the characteristic signal (col 2 line 36-39).

In regard to claim 11, Koluvek discloses wherein the switch is closed so that the malfunction detecting circuit is electrically conducted to the measurement circuit when the determination circuit determines that the sensor malfunctions (col 4 line 34-38).

In regard to claim 13, Koluvek discloses wherein the determination circuit (col 5 line 9-12) is included in the evaluation circuit (col 4 line 30-33).

In regard to claim 14, Koluvek discloses wherein the switch of the malfunction detecting circuit is a semiconductor switch (col 4 line 36-37).

In regard to claim 7, Koluvek discloses when detecting a condition of an electrode the voltage found is compared to a "normal operating voltage" this voltage would have to originate under normal operating conditions (col 5 line 3-6) then a divided voltage is detected when the switch of the malfunction detecting circuit is closed (col 4 line 34-38) so that the malfunction detecting circuit is electrically conducted in parallel with the sensor (col 4 line 65 – col 5 line 10), and the determination circuit determines whether the sensor malfunctions based on a relation between the "normal operating condition" and the divided voltage (col 5 line 6-12).

Koluvek lacks specifically disclosing a normal voltage is detected when the switch of the malfunction detecting circuit is opened so that the malfunction detecting circuit is not electrically conducted in parallel with the sensor.

It would have been obvious to one with ordinary skill in the art at the time the invention was made for one to use engineering intuition and detect the "normal operating condition" while the circuit is accurately detecting pH values of the liquid so to have a normal value for testing purposes.

3. Claims 8, 9, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koluvek (4829253) in view of Kiyoshi (JP 62-261950) and Tamagawa et al. (Pub 20020097053).

In regard to claim 8, Koluvek lacks where wherein the determination circuit stores a certain range of a difference between the normal voltage and the divided voltage in advance in consideration of dispersion of a manufacturing of the sensor, and the determination circuit determines that the sensor malfunctions when the relation between the normal voltage and the divided voltage is out of the certain range.

Kiyoshi discloses wherein the value between (claim 2 “comparing circuit”) the normal voltage (claim 2 “reference voltage”) and the divided voltage (claim 2 “amplified dropped voltage”) is found in advance in consideration of dispersion of a manufacturing of the sensor, and the determination circuit determines that the sensor malfunctions when the relation between the normal voltage and the divided voltage exceeds a threshold value (claim 2 last indentation).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Koluvek to find the value between the normal and divided voltage and use that to determine if the sensor malfunctions as taught by Kiyoshi in order to quickly and automatically detect an abnormality without removing electrodes and a detecting part (field of invention).

Tamagawa et al. discloses that in determining sensor failure comparing a voltage to a maximum and minimum value (range) so that if the voltage lies outside these

values the sensor is considered faulty, and these minimum and maximum values would have to be stored as they are continuous compared (para 69).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Koluvek as modified to include a minimum value as well as storing the values as taught by Tamagawa et al. in order to properly check all variables that a faulty sensor produces (paragraph 69).

In regard to claim 9 and 15, Koluvek lacks wherein the certain range is adjustable based on the normal voltage, and where the range increases with an increase in the voltage.

MPEP 2144.04 V D, *In re Stevens*, 212 F.2d 197, 101 USPQ 284 (CCPA 1961) states adjustability is not a patentable advance as long as there is a recognized need in the art. It is known in the art electrodes have many different properties based on the material they are made from, and will be able to produce a normal voltage based on the properties, and the threshold values will be adjusted accordingly; when the normal voltage is increased by a certain percent, the upper and lower threshold values would have to be similarly increased, causing a bigger increase in the high end and thus a higher range overall.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koluvek (4829253) in view of and Tamagawa et al. (Pub 20020097053).

Koluvek lacks wherein the determination circuit determines that the sensor malfunctions when the normal voltage is less than a first threshold voltage or the normal



voltage is more than a second threshold voltage that is higher than the first threshold voltage.

Tamagawa et al. teaches wherein the determination circuit determines that the sensor malfunctions when the normal voltage is less than a first threshold voltage or the normal voltage is more than a second threshold voltage that is higher than the first threshold voltage (para 69).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Koluvek as modified to include a minimum and maximum value check in order to properly check all variables that a faulty sensor produces (paragraph 69).

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koluvek (4829253) in view of Dietz et al. (4532013).

Koluvek lacks wherein a second switch is connected between the sensor and the determination circuit so that a connection between the sensor and the determination circuit is conducted or not, wherein the second switch is opened so that the connection between the sensor and the determination circuit is not conducted when the determination circuit determines that the sensor malfunctions.

Dietz et al. teaches that if the conclusion can be made that the sensor is defective it can be disconnected in its entirety from the circuit (col 2 line 41-45).

It would have been obvious to one with ordinary skill in the art at the time the invention was made that if the sensor was known to be defective to remove it from the

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circuit until the problem is corrected or a new sensor is installed as taught by Dietz et al. and an obvious way to do this is by use of a switch between the sensor and the evaluation unit in order to keep the evaluation unit from output incorrect values.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Beijk et al. (4777444) teaches a pH detector that uses switches to change from a normal pH fluid test to a test that detects condition of electrodes. Luzzana (4353867) teaches performing a few samples of a gas with an electrode and analyzing the signals, if the noise and drift levels are within a predetermined range, the sensor is deemed to be ok and many readings are taken for signal analysis.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Natalini whose telephone number is 571-272-2266. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeff Natalini



**ANJAN DEB**  
**PRIMARY EXAMINER**